

**Rhode Island
Department of Environmental Management's
Forestry Asset Management Plan**

**Department of Environmental Management
Office of Strategic Planning and Policy
Director Jan Reitsma
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About The System

The Department of Environmental Management's (RIDEM) twenty-three management areas cover 45,000 acres of predominantly forestland, but also water bodies and open fields. Access to the management areas is by car, bike or foot via 138 miles of roads and 81 miles of foot trails. Many people use the forests and recreational facilities at management areas year-round, including hikers, mountain bikers, off-road vehicle users, anglers, horse riders, bird watchers, walkers, hunters, nature lovers, sightseers, cross-country skiers and snowmobilers. Additionally, five outdoor recreational facilities are located at the George Washington Management Area and Arcadia Management Area, including George Washington Campground, Horseman's Campground, Beach Pond, Pulaski State Park and Browning Mill Pond. The 2 campgrounds offer 85 low cost camping sites and 3 admission-free freshwater beaches; naturalists provide free interpretative and educational programs at selected facilities; picnic and cookout facilities are also available.

The Division of Forest Environment includes 29 full-time (5 federal) and 24 seasonal staff to manage forests and outdoor recreational facilities located at management areas. The Division works to provide forest fire protection, enforce public safety rules and regulations, monitor and recommend controls for forest insects and diseases, and manage timber resources and timber harvests.

The Division helps the federal government to provide landowner assistance programs, work with communities to promote urban tree health, administer the Rural Community Fire Program to provide general assistance, materials and fire hose maintenance services to RI's municipal fire departments. Furthermore, the Division administers the federal Natural Resource Conservation Education Program and the federal Forest Legacy Program that buys development rights.

Contribution to Quality of Life in RI is Growing

The importance of management areas to Rhode Island's quality of life is increasing as development sweeps Rhode Island, the smallest and the second most densely populated of the fifty states. With only 1,200 square miles, Rhode Island is smaller than Yosemite National Park. Between 1988 and 1995, a seven year time frame, Rhode Island developed farm and forestland acreage that almost equaled the total land area of the City of Providence (12,029 acres). As a result of sprawl, an additional 24,000 acres of forestland could be converted to developed land by 2020¹. Since management areas are protected against development, they will be key in providing health, environmental, and economic benefits as other forest resources are developed.

Recreational Opportunities for Healthier Rhode Islanders

Management areas improve the quality of life in the State by providing outdoor recreation opportunities. According to the Parks and Recreation Federation of Ontario and the Ontario Ministry of Tourism and Recreation, recreational activities improve quality of life by promoting a full and meaningful life, self-esteem, ethnic and cultural harmony and healthful human development in children. Recreation also reduces stress, alienation, loneliness and crime rates, and builds strong communities².

Management areas also offer public open space for outdoor exercise. Outdoor exercise can be an important part of a healthy exercise program, which is essential to regulate weight, it helps fight obesity and reduces the risk of developing heart disease and diabetes.

¹ H.C. Planning Consultants, Inc. and Planimetrics, LLP. *The Cost of Suburban Sprawl and Urban Decay in Rhode Island; Executive Summary*. December, 1999

² *Benefits of Parks and Recreation: A catalogue*, The Parks and Recreation Federation of Ontario, 1992

Improving Environmental Quality: Cleaner Air and Water and Plentiful Habitat

Rhode Island's forestlands, including management areas, provide habitat for an estimated 60 percent of the State's native animals.³ Forests like those at management areas preserve trees and forest soils that protect against runoff by regulating stream flow and reducing soil erosion and flooding.⁴ Additionally, the forests clean the air as they convert carbon dioxide, a by-product of the burning of fossil fuels, into breathable oxygen.

Boosting the Economy

Timber harvested at management areas contributes to the growing forest products industry in Rhode Island. The value of the annual timber payroll and the value of timber and allied products in Rhode Island increased from \$69.9 million in 1985 to \$118.8 million in 2000. The industry represents 2.7 percent of the manufacturing workforce and employs 2,100 workers, with a payroll of \$60 million⁵.

Management areas also contribute to recreation-related commerce by generating revenues and jobs as mountain bikers, anglers and others buy supplies, equipment and services. Additionally, the Parks & Recreation Federation of Ontario states that "Corporate CEO's say quality of life for employees is the third most important factor in locating a business, behind only access to domestic markets and availability of skilled labor."² Management areas are increasingly recognized as vital to the quality of life that is the basis of a healthy economy.

³ RIDEM, Division of Planning & Development. "Protecting Our Land Resources". 1996.

⁴ Lerner, S., Poole, W. "The Economic Benefits of Parks & Open Space". The Trust for Public Land, 1999.

⁵ (a) Remington, S.B., Sendak, P.E., Schumann, D.R., "Rhode Island's Timber Economy: A Review of the Statistics", USDA Forest Service, Northeast Forest Experiment Station, 1985. (b) American Forest and Paper Association, AF&PA, "Why the Forest and Paper Industry is Important to Rhode Island", 1997.

EXECUTIVE SUMMARY

The Director of the Rhode Island Department of Environmental Management (RIDEM), Jan Reitsma, has called for better definition of the long-term asset management needs for the RIDEM's Bureau of Natural Resources. In response, the Office of Strategic Planning and Policy has completed two asset management plans. The first plan, The Rhode Island Parks and Beach System Asset Management Plan (RIPBS AMP) January 2001, evaluated state parks and beaches. This second study, The Rhode Island Department of Environmental Management's Forestry Asset Management Plan (RIDEM FAMP) evaluates outdoor recreational facilities and forests managed by the Division of Forest Environment which are located in the 23 state management areas. The FAMP is based on consultation with Steering Committee Members, a brief review of the National Association of State Foresters' statistical databases, Forest Service Statewide Inventory Reports and the RIPBS AMP.

The Division of Forest Environment's ability to manage forests and outdoor recreational areas is hindered by a lack of funding for repair or replacement of buildings, equipment, roads, trails and vehicles exacerbated by chronic shortages of full and part-time staff. Funding levels between Fiscal Years (FY) 1994 and 2001 for asset management, state staff, capital development and operations failed to keep pace with inflation. The Division has an estimated backlog of \$4.58 million in high-priority repairs, replacements and renovations for 44 percent or 105 of its assets.

The Department has received \$1.60 million in the capital budget for FY 2001 and FY 2002 to rebuild Pulaski State Park and the Bowdish Dam. It is requesting an additional \$1.28 million in the capital budget from FY 2003 to FY 2007 to address high-priority repairs, replacements and renovations needed at management areas. The Division will receive a \$15,000 federal grant in FY 2002 for replacement of high priority communication equipment. However, an additional \$1.69 million is needed to address the unfunded high priority repair, replacement and renovation of assets listed on the

backlog of which \$1.36 million or 80 percent for non-capital needs such as vehicles, maintenance and communications equipment.

This plan recommends that the Department develop additional sources of funding to supplement tax dollars by investing revenue from timber sales in asset repair, replacement, renovations and enhancement, and by creating incentives for managers to increase revenues generated at outdoor recreational facilities.

Additionally, the plan recommends options to enhance asset management for the Division of Forest Environment and other Bureau of Natural Resources Divisions within the Department. Options include pay-as-you-go replacement of assets (routine replacement of motor vehicles, maintenance equipment and communications equipment), and streamlining the asset management processes.

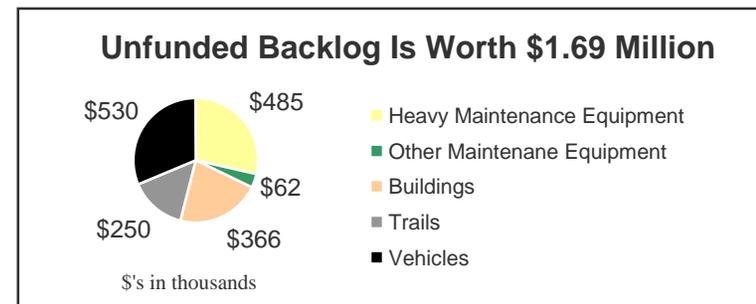
Section 1 of the plan contains:

- Asset evaluation methods
- Summary of the estimated costs to repair, replace and renovate high priority assets
- Seven-year trend analysis of the budget for asset management, operations, capital development and staff
- Ten-year trend analysis of staff levels
- Review of funding sources in other states for outdoor recreation facilities
- Asset management and funding strategies to preserve and enhance the system

Section 2 of the plan contains a comprehensive inventory of Division of Forestry assets including land, timber, trails, paved and unpaved roads, buildings, bridges, dams, registered and unregistered maintenance equipment, vehicles, vehicle attachments (i.e. snow plow), communication equipment and all other assets worth \$3,000 or more.

Findings

- The management areas and associated assets administered by the Division of Forest Environment are worth an estimated \$285 million dollars (see appendix A for methodology).
- Over the last seven years, the Division of Forest Environment lacked sufficient funds to invest in asset management, capital development, operations and maintenance and staff resulting in a backlog of repairs, replacements and renovations.
 - From FY 1995 to FY 2000 the Forest Environment's operating and maintenance budget lagged behind inflation by \$1.4 million.
 - The Division of Forest Environment has had a deficit in general revenue averaging \$240,000 a year from FY 1994 to FY 2000. The deficit declined to \$85,600 in FY 2001 due to additional general revenue for seasonal staff of almost \$100,000.
 - Only \$170,000 was spent on capital improvements of assets in management areas (for the design of Bowdish Dam) from FY 1994 to FY 2000, a time when the Department was concentrating on the renovation of park and beach facilities and commercial pier improvements at a cost of almost \$8 million and almost \$5 million respectively.
 - The levels of RIDEM state funded forestry staff fell significantly in Rhode Island during the 1990's. Full-time staff levels declined by 58 percent from 57 to 24. Part-time staff fell by 20 percent from 30 to 24 from FY 1990 to FY 2000 despite an increase in the appropriation for seasonal staff.
- Rhode Island's Forestry Division experienced the worst staff decline in New England; a 46 percent drop from 57 in FY 1988 to 31 in FY 1998. During that time, New Hampshire and Maine staff levels fell 28 and 27 percent respectively, while those of Massachusetts and Vermont fell less than 12 percent and levels in Connecticut rose by 3 percent.
- Forest Environment is aggressive in seeking (and obtaining) federal funds. However, most of this funding is earmarked for program expenses, and is therefore not available to pay for asset management.
- The Division has a backlog of priority repairs, replacements and renovations worth \$4.64 million of which:
 - \$1.67 million is funded (\$700,000 is enacted for building renovations and \$955,000 for rebuilding Bowdish Dam in the FY 2001 and 2002 capital budgets and a \$15,000 federal grant will cover replacement of some high priority communication equipment).
 - \$1.28 million may be funded through the Department's request in the FY 2003 to FY 2007 capital budget.
 - \$1.69 million of high priority repairs and replacement of assets are completely unfunded (refer to graph).



- Funding for non-capital projects such as vehicle and equipment replacement and smaller facility repairs fall between the cracks because they are not included in either the capital or operating budget systems.
- The state could achieve a net savings of about \$1.10 million over the next five years if the Division of Forest Environment continues to maintain roads and trails. In order to maintain the capacity to do this work, the Division needs to replace trail maintenance equipment at a cost of \$330,000 and should hire an additional full-time, heavy-equipment operator.
- The Division of Forest Environment is hindered in its efforts to share maintenance equipment with other Divisions in the Bureau of Natural Resources due to restrictions set by federal agencies on equipment funded by federal grants. The Department is now proposing a computerized cost allocation program, which will address such issues and facilitate equipment sharing. The system will track the usage of shared equipment and allocate the cost of use to the appropriate division.
- Many agencies that manage outdoor recreation facilities use revenue generated at the recreational facilities for reinvestment in the system. Such self-generated income that supplements state tax support for operations and maintenance is usually placed in a dedicated account that can be rolled over into the next year's budget. Additionally, as self generated revenue increases, the system benefits compound. For example, a system manager may begin with a program that sells firewood and use the revenue to build rental cabins that in turn generate revenue for the system.

In contrast, Rhode Island management area revenue is deposited into the general fund for reallocation. The Division is almost 100 percent reliant on general revenue for asset protection. Since general revenue may not be carried over at the end of the fiscal year, managers are hampered in completing non-capital projects that span fiscal years, compounding the problems of inadequate funding. Moreover, managers have no access to funds, which

could be used to provide revenue producing facilities and services.

- The Division of Forest Environment could increase revenues generated at recreation facilities in management areas by increasing camping and other fees to market value, reinstating park user fees and by adding and expanding entrepreneurial pursuits.
- Timber sales, which are deposited into a trust fund, could be better invested in a fund that bears a higher interest rate.

Recommendations

Short-Term

- Restore fiscal health of system. Seek an increase in general revenue as follows:
 - For the \$1.69 million of unfunded high-priority items that need to be replaced within 7 years:
 - Capital funding of \$335,000 from the State for building improvements.
 - A supplemental request of \$797,500 to repair/replace smaller, shorter term items (for trails and for all maintenance and communication equipment on the high priority list).
 - An additional \$112,277 a year to the operating and maintenance budget for 5 years starting in FY 2003 at a total of \$531,387 for vehicles and minor building projects.
 - Increase the annual operations and maintenance budget by \$86,000 a year to eliminate the structural deficit.
- Continue to seek federal grants for asset management.
- The federally-funded Recreation Trails Program should be used as a source of funding for trail maintenance to the greatest extent possible.
- Coordinate with the Rhode Island Department of Transportation and Trails Committee to obtain maximum funding possible for trails and road maintenance.
- Implement the repair and replacement schedule located in Section 3 of the plan.
- Adopt pay-as-you-go asset management for items that are routinely replaced; i.e., set a regular schedule for maintenance,

repair and replacement of high-priority assets, such as allocating \$45,000 for vehicle leases every year.

- Continue to use Department staff to maintain roads and trails at savings of \$1.10 million for the next 5 years compared to projected contractor's costs.
- Continue to share equipment, staff and other resources to the greatest extent possible among the divisions in the Bureau of Natural Resources.
- Work with federal agencies to liberalize equipment-sharing policies for equipment purchased with federal funds.
- Create an Internal Review Committee at the Department level similar to the Department's Capital Committee to review asset replacement requests for items too small or too short-term to be included into the capital budget, such as vehicles and maintenance equipment.
- Conduct a pilot program to increase revenues generated at management areas (i.e., camping fees) and place them in a repair/replacement trust fund for investment in the system. Other sources of funding such as federal grants, bonds, and donations should also be analyzed in the pilot as a means to increase funding support.

Long-Term

- Explore the feasibility of developing a comprehensive asset management plan and inventory database for all assets of the Bureau of Natural Resources as a foundation for a **long-term asset management plan** for Forestry, Parks and Recreation, Coastal Resources, Law Enforcement, Fish and Wildlife, and Agriculture.

- Invest timber sale receipts in a trust fund that will maximize receipts allowing for receipts to roll over from year to year providing the division with flexibility to save for expensive equipment and other needs.
- Explore the feasibility of increasing revenues generated at outdoor recreational facilities, such as instituting market-based fees at campgrounds, and/or concessioning out the George Washington Campground, and soliciting donations for specific projects or programs.
- Conduct a study on Natural Resources Bureau staffing needs to identify where more staff is needed and whether some functions can be consolidated.
- Conduct a pilot enterprise study to evaluate the effectiveness of alternatives to generate revenue at outdoor recreation facilities including increasing user fees to market level, instituting park entrance fees, expanding camping services and/or leasing out camping facilities, and expanding beach facilities as well as increasing efforts to secure donations.

Asset Management Evaluation

Methods for Evaluating the Condition of Assets

We evaluated the physical condition of assets worth over \$3,000 that are managed or used by the Division of Forest Environment. Assets include buildings*, bridges*, dams*, vehicles, communication equipment, maintenance equipment, multi-use trails (81 Miles)** and paved & unpaved roads (138 Miles)** [*Only at George Washington and Arcadia Management Areas, **At all management areas].

A RIDEM planner compiled an inventory of all assets in conjunction with a Forestry Division manager who provided information such as:

- asset specifications such as model, make, size and structure
- replacement cost or market value
- maintenance, repair or replacement needs
- ranks for condition, importance and priority (see tables 1, 2 and 3)

The planner designed a database and input the inventory data into it. Managers may use the database to prioritize assets, to track asset management progress and to conduct cost benefit analyses. Assets are prioritized by the two ranks: importance and condition. The importance (1) rank captures how critical an asset is to the facility and its ability to function (see table 1). The condition (C) rank captures the physical condition of an asset (see table 2).

Table 1: Importance

Rank	Definition
1	Not important
2	Slightly important
3	Somewhat important
4	Important
5	Essential

Table 2: Condition

Rank	Definition
1	Needs replacement – Asset would be more expensive to repair than replace, or cannot be repaired.
2	Needs significant repair – Asset requires repair/replacement of a substantial percentage of more than one component.
3	Needs moderate repair – Asset requires attention/repair beyond routine maintenance to include limited replacement of one or more component
4	Good condition – Asset requires no significant repair.
5	New

The planner calculated a number for priority as follows: Priority = Importance (Importance – Condition). Table 3 shows that each priority number fits into one of four ranges. Forestry managers ranked all assets and the planner calculated a priority for each asset then organized assets in a schedule according to the timeframes in table 3. Assets should be repaired or replaced within the associated time period.

Table 3: Priority

Priority Range	Priority Category	Needs To Be Repaired/Replaced Within...
15 to 20	High Priority	0 to 7 years
8 to 14	Priority	8 to 12 years
1 to 7	Average Priority	13 to 16 years
-4 to 0	Low Priority	17 to 20 years

Example: There are two assets, asset A and B: both in poor condition with a rank of 1, but these are not equally important to the functioning of the management areas. Asset A is a vehicle that is used for plowing in the winter and for fire patrol in the summer and is highly important. It is ranked essential on the importance scale. Asset B is a pit toilet that does not get used much and is marginally important. It is ranked 2, slightly important on the importance scale. The vehicle priority rank is 20, high priority, and should be addressed within 7 years. The pit toilet rank is 2, average priority, and should be addressed in 13 to 16 years.

Asset A: Vehicle:

- Importance = 5
- Condition = 1
- $5(5-1) = 20$
- Priority = 20

Asset B: Pit Toilet:

- Importance = 2
- Condition = 1
- $2(2-1) = 2$
- Priority = 2

Savings to Be Made in Trail and Road Maintenance

The state will save about \$1.10 million net over the next five years according to a five-year analysis of trail and road maintenance at management areas. The analysis compares the cost of having the Division of Forest Environment versus the cost of having a private contractor perform trail and road maintenance at management areas. Based on costs and hours for the 2000 calendar year, it would cost the Forestry Division \$192,000 a year to do the same work that a contractor would have to charge \$522,500 for. The cost of materials (i.e. gravel) will be the responsibility of the Department whether or not a private contractor is hired out. Therefore, material costs are not included in the analysis. However, the State would have to buy new equipment within the next few years and should hire an additional full time heavy equipment operator to ensure that the division would have the means to conduct the work.

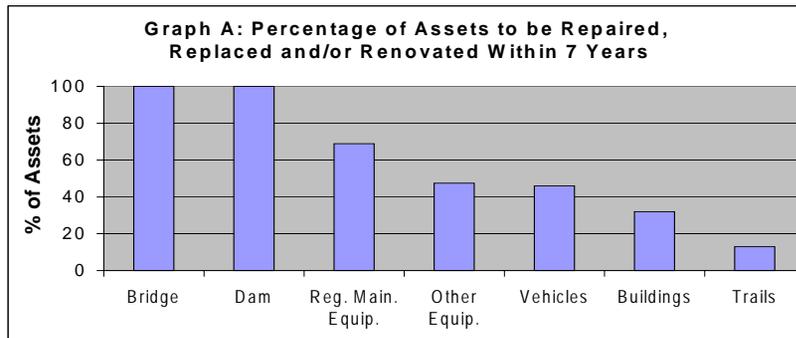
The net savings of \$1.10 million include the cost of \$330,000 for equipment and about \$50,000 for an additional full-time employee the Department would need to be able to perform the work.

Issues & Problem Areas

Repair and Replacement Backlog

Forestry staff often must defer maintenance and repair projects such as road and roof repair, and refrain from replacing assets such as dump trucks and base radios until assets are completely unusable or present safety risks. The backlog of repairs and replacements includes 106 high priority projects that need to be addressed in the next seven years at an estimated cost of \$4.58 million. In addition, the Department anticipates working with the state of Connecticut to facilitate the renovation of the Connecticut dam, which maintains the pond at Pulaski State Park in Rhode Island. Graph A shows that a high number of the Division of Forest Environment's assets need to be addressed within 7 years. One hundred percent of bridges and dams need significant repair and/or renovations, 71 percent of heavy-maintenance equipment needs to be replaced; and between 45 percent and 50 percent of communication equipment, unregistered maintenance equipment and vehicles needs to be replaced.

The condition (C) rank captures the physical condition of an asset. The planner calculated a number for priority as follows: Priority = Importance (Importance – Condition).



Traditionally, the Forestry Division has used surplus equipment received free of charge from the federal government to substitute for equipment that needed replacing. However, using federal surplus may be more costly than direct replacement. Surplus items are worn, hard

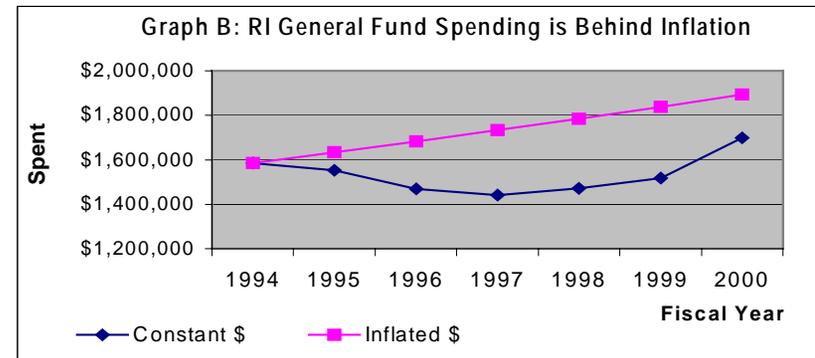
to fit for parts and do not match the division's needs. The federal surplus items that account for almost half of the Division's fleet of vehicles and maintenance equipment now need to be replaced.

Deteriorated Assets are Costly

The poor condition of the maintenance equipment, vehicles, and communication equipment is costly since staff must spend time fixing broken items and transporting them to be fixed. Parts and fees for contractors to maintain and fix vehicles and maintenance equipment totaled \$46,500 last year alone. Many of the repaired items need to be replaced and since items are broken and maintenance and other work is deferred problems continue to mount compounding one another and additional costs surface. For example, if the Division has too many fire patrol vehicles out for service, staff cannot patrol effectively and fires are more likely to get out of control resulting in damage to timber and habitat, and possible threats to human safety.

Budget Lags Behind Inflation

From FY 1994 to 2000, almost 100 percent of dollars spent on asset management, operations and state staff came from general revenue. During this time the state general revenue spent for Forestry lagged behind inflation by \$1.4 million (see graph B).



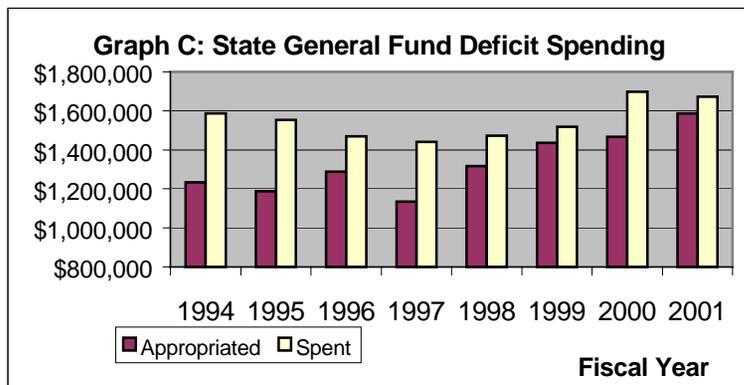
*Inflation = 3 percent growth/year.

Moreover, spending levels from FY 1995 to 1999 remained below the level of spending in FY 1994. In addition, the Division did not receive any capital funds for major improvements and renovations during these seven years (FY 1994 to FY 2000).

The Forestry Division also sought federal assistance in procuring surplus items and in grants. Federal surplus items present many drawbacks as noted and are no longer available. Federal grants during the last seven years were restricted to specific federal programs such as the Forest Legacy Fund, Natural Resource Conservation Education, Rural Community Fire Program, and Cooperative Forestry Program, and could not be used for asset management.

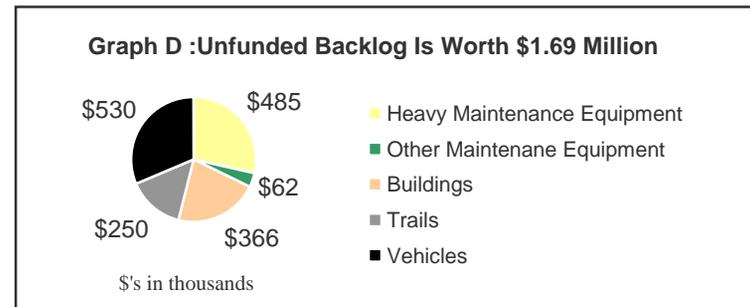
Allocations too Small

During the same seven-year time period, from FY 1994 to FY 2000, spending exceeded state general revenue allocated, resulting in deficits (see graph C). The deficit averaged \$240,000 over the last seven years, mainly decreasing over the last five years. During FY 2001 deficit spending dropped to \$86,000, due to the increase in funding for seasonal staff of almost \$100,000. Costs associated with operations, maintenance, overtime for full time staff, and asset management also have contributed the deficit seen in previous years.



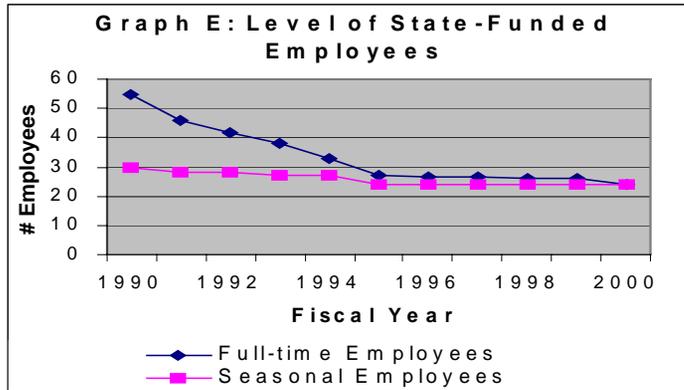
Funds Needed to Address the Backlog and Deficit

The division has a backlog of \$4.58 million in high priority repairs, replacements and renovations. The Department has received \$1.60 million in the capital budget for FY 2001 and FY 2002 to rebuild Pulaski State Park and the Bowdish Dam and is requesting an additional \$1.28 million in the capital budget from FY 2003 to FY 2007 to address these items. Also, the division will receive a \$15,000 federal grant in FY 2002 for replacement of high priority communication equipment. However, an additional \$1.69 million is needed to address the unfunded high-priority repair, replacement and renovation of assets listed on the backlog of which \$1.36 million or 80 percent is for non-capital needs such as vehicles, maintenance and communications equipment. (see graph D)

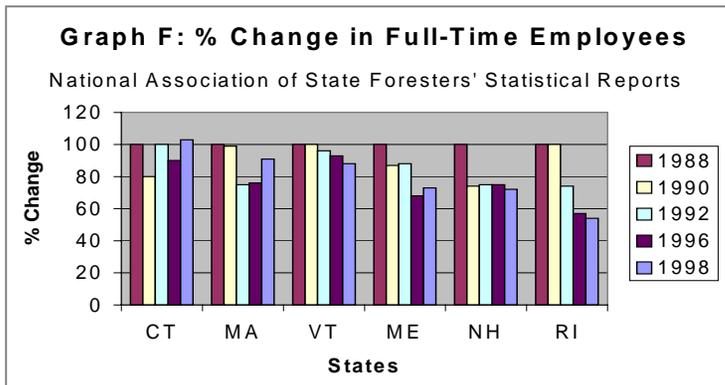


Staff Levels Have Declined Dramatically

State full-time Forestry staff levels declined by 56 percent from 55 in FY 1990 to 24 in 2000. The decline in full-time staff has been exacerbated by a 20 percent decline in seasonal staff from 30 to 24 (see graph E on the next page) that occurred despite an increase in \$100,000 in FY 2001 in state general revenue for seasonal staff. Seasonal employees are especially important to recreational operations at management areas since they work at beaches, parks and patrol trails ensuring public safety.



Rhode Island experienced the sharpest decline in full-time staff among New England State forestry agencies. From FY 1988 to FY 1998 staff in Rhode Island declined by 46 percent, whereas staffing in New Hampshire and Maine declined by 28 percent and 27 percent respectively (see graph F). Staff levels in Massachusetts and Vermont declined less than 12 percent while levels in Connecticut increased by 3 percent.

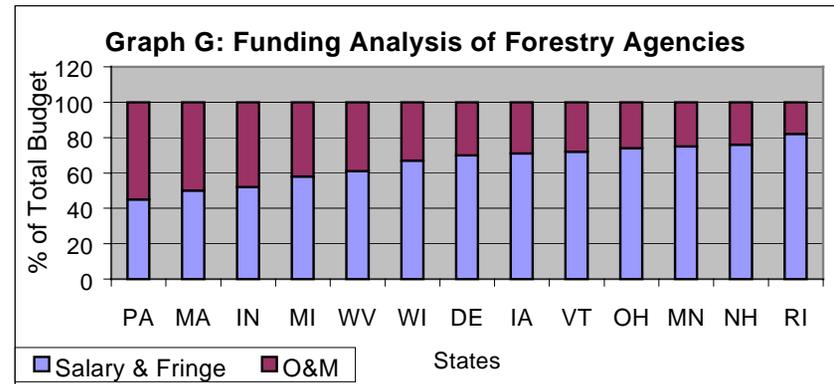


Staff shortages in Rhode Island have resulted in overtime and split shifts and caused staff to become overworked during the busy seasons, lowering productivity, threatening customer services and posing safety risks as tired staff operate forest maintenance equipment.

Rhode Island Gets Less than Other Northeastern State Forestry Agencies for Operating and Maintenance

In an email survey of the 20 Northeastern states⁶ the Division of Forest Environment's Chief asked the following question: "Given your forestry agencies' total budget (Federal and State sources), what percent of that budget is used for salary and fringe and what percent is used for all other expenses grouped as operations and maintenance?"

Responses ranged from a low of 18 percent in Rhode Island to a high of 55 percent of the total budget in Pennsylvania (see graph G). While the division could use more staff to offset the decrease in staff experienced over the past ten years, managers believe that the division has a greater need to concentrate on increasing the operations and maintenance budget.



⁶ The region is designated by the Northeastern Area Association of State Foresters (NASF).

Funding Trends at Outdoor Recreation Areas

In the nation, the trend for funding operations and maintenance of outdoor recreational facilities has been away from state tax dollars and towards revenue generated at outdoor recreational facilities. Revenue is deposited into dedicated funds for reinvestment in the system, giving facility managers an incentive to increase revenue. Managers have tried entrepreneurial pursuits such as creating new programs that attract tourists or selling firewood, have increased fees to meet fair market values and have enforced fee collection more strictly⁷.

In contrast, revenue generated at RI's management area outdoor recreational facilities is deposited in the general fund for reallocation. Table 4 shows how Forestry generates money and ways it could increase revenue to augment declining state funding support. Other RIDEM outdoor recreational facilities have been successful in increasing revenues. For example, at Burlingame State Park, \$90,000 of the concession lease receipts, one half the annual lease value, is reinvested in the campground. The good physical and fiscal condition of the campground shows the difference that increased revenue makes. Park managers used lease proceeds to buy cabins that have paid for themselves in one season. The profit from these cabins goes into the general fund. These profits could instead be invested in other park improvements that would, in turn, improve service and generate more income. Box A outlines a suggested pilot project to increase revenues at Rhode Island's outdoor recreation facilities

⁷ Rhode Island Parks and Beach Asset Management Plan and Study, RIDEM, January 2001.

Table 4: How Forestry Could Increase Self-Generated Revenue

\$ Making Activity	Have It?	Ways for Forestry to Enhance/Implement
Entrance Fees	N	Charge fees/preferably by person, which is unlikely since the RI General Assembly eliminated park and management area entrance fees to increase access.
Beach Entrance	N	Charge fees/preferably by person.
Camp Site Rentals	N	George Washington charges \$8/site for residents & \$12/site for nonresidents per night. Horseman's Campground is \$3 per night, paid on the honor system. Rates could be raised by \$3 to market price of \$11 and \$15 respectively. Marketing would be needed to ensure sites are fully utilized.
Cabins/Cottage Rentals	N	No Cabins or Cottages to rent. The experience at Burlingame suggests high potential for rental if cottages/cabins were built.
Lodges	N	Too disruptive to the natural environment and market potential is unclear.
Concession Lease Proceeds	N	Could lease out George Washington Campground like Burlingame Campground.
Equip. Rentals	N	Market demand is unclear and should be investigated.
Cross Country Ski Fees	N	Charge for program at Pulaski State Park.
Tours	N	Most programs should remain free to make environmental information readily available, although special tours could be offered with fees.
Picnic Area Rentals	Y	Possibility of expanding to Beach Pond and Browning Mill Pond.

Box A: Enterprise Fund Pilot

Establish an Enterprise Fund Pilot at one or more outdoor recreational facilities:

- Forestry would need to continue to receive State funding support since facility generated income would not be sufficient to cover all or even most expenses
- Use the RIDEM FAMP as the baseline for asset and fiscal condition
- Staff should review the fee structure and current fees to determine whether to revise fees to meet market conditions
- Use revenues from fees for two main project categories
 - Strategic repairs and replacements of high priority assets
 - Enhancements that can generate additional revenue
- Evaluate asset and fiscal conditions of participating facilities compared to nonparticipating facilities periodically

Appendix A: Asset Inventory and Value Methodology

Land

We based the acreage of management areas on data in the Atlas of Rhode Island Wildlife Management Areas, (Brian C. Tefft, 29 June 1993, RIDEM), since this is the most recent complete data set available. To calculate the market value of the land, we multiplied a cost per acre value of \$3,271 per acre (based on the costs of recent Department acquisitions of land abutting management areas) by 45,000 acres (the acreage of management areas).

- 45,000 acres x \$3,271/acre = \$147,195,000

Timber

We estimated the volume of the timber at the 23 state management areas based on data listed in the USDA 1998 Forest Service state wide timber inventory reports and the selling timber rate on recent sales.

- $[\text{total volume of timber in Rhode Island}] / [\text{total area of forestland in RI}] = [\text{average of the timber volume per area unit of forestland in RI (units = average board foot/acre)}]$
- $[\text{average of the timber volume per area of forestland in RI}] \times [\text{area of 23 management areas (present day inventory; 45,529}^8 \text{ acres)}] = [\text{volume of timber at management areas (units = board feet)}]$
- $[\text{total volume of timber of State lands}] / 1000 \times [\text{average present day stumpage value per 1000 board foot}] = [\text{dollar value of timber at Rhode Island Management areas}]$

- In 1998, the total volume of timber in Rhode Island State Management areas is 178 million board feet with an estimated value of \$18 million.

Bridges, Buildings, Communication Equipment, Dams, Motorized Vehicles, Paved & Unpaved Roads, Trails, Etc

We worked in collaboration with the Division of Forest Environment and the Division of Planning and Development staff to update the asset inventory by gathering data in site visits and referring to the previous inventories (listed below). Refer to tables 1 & 2, appendix c, for details on asset replacement cost sources and the estimated costs.

Inventories

- Department of Administration's Insurance Database
- RIDEM's Building Inventory (1970's)
- DOT's 2000 Bridge Inspection Reports
- FE's inventory
- RIDEM's Management Services Database

Appendix B: A 5-Year Cost-Benefit Analysis of Trail and Road Maintenance at Management Areas

Division of Forest Environment -

The Division spends about 5,500 hours of staff time a year on trail and road maintenance at management areas. We based this workload for trail and road maintenance on the number of hours staff spent in the year 2000. The amount and type of road and trail work conducted in that year did not differ much from previous years, and should not in change much in the next five years. Staff is paid about \$35/hour to conduct trail and road maintenance in the management areas.

Maintenance activities, grading and putting gravel on roads and trails, pruning and mowing of road and trail shoulders and repair and regular maintenance of drainage structures and bridges, require \$330,000 worth of heavy equipment listed in table A. The Division would need to replace their old equipment in the next five years; therefore the cost to replace it is included in this analysis. Additionally, the cost to employ another full time heavy equipment operator is included in the cost analysis because the Division should have another full time heavy maintenance equipment operator.

Appendix B, Table A: Trail and Road Maintenance Equipment Purchase Costs

Equipment	Price
33,000 GWV Dump Truck	\$70,000
Road Grader	\$100,000
Front End Loader	\$90,000
Bulldozer	\$70,000
Total	\$330,000

The total cost for the Division of Forest Environment to maintain roads and trails in the management areas is \$1,517,500 (see calculations in table B).

Appendix B, Table B: Five Year Cost Analysis for The Division of Forest Environment

Item	Calculation	Total
Staff Hours	(5,500 hours/year) x (5 years)	27,500 hrs.
Staff Time Costs	(\$35/hour) x (27,500 hours)	\$ 962,500
Equipment	Table A	\$330,000
Hire Additional Full Time Employee	(\$45,000/year) x (5 years)	\$225,000
Maintenance and Gas	(\$3,500/year) x (5 years)	\$17,500
Total Costs	(\$962,500) + (330,000) + (\$225,000) + (\$17,500)	\$1,535,000

Private Contractor -

In order to hire a private contractor to conduct the trail and road maintenance work, the Department would have to pay for the rent of items and services listed in table C. For the purposes of this analysis, we have taken an average of these costs as an estimate of an hourly rate to hire a private contractor. The average (\$95/hour) x (5,500 hours spent on trail and road maintenance) x (5 years) = \$2,612,500.

Appendix B, Table C: Service and Equipment Rental Rate for Private Contractor

Service/ & Equipment Rental	Cost per hour
Road grader & operator	\$125.00
front end loader	\$85.00
Bulldozer	\$75.00
Skilled laborer	\$30.00
Average	\$95.00

Costs provided by the Natural Resource Conservation Service

5-Year Cost Benefit Comparison -

Clearly, the state will realize substantial savings of \$1,095,000 if the Division of Forest Environment conducts routine trail and road maintenance at the management areas over the next five years, even if

the Division buys the needed heavy equipment and hires an additional full time heavy equipment operator (see table D).

Note: The cost of the materials (i.e. gravel will be the responsibility of the Department regardless of whether contractors are hired or not).

Appendix B, Table D: 5 Year Cost Savings When The Division Forest Environment Conducts Trail & Road Maintenance

Who?	Total Cost for 5 Years
Private Contractor	\$2,612,500
Forest Environment	\$1,517,500
Cost Savings	\$1,095,000

Appendix C, Table 1: Asset Replacement Cost

Asset Category	Asset Type	Replacement Cost Amount	Source
<i>Buildings</i>	Building and building-like structures	Calculation: [Costs x square footage of building = replacement cost] (See Table B for costs).	Planning & Development
<i>Bridges, Dams, Etc.</i>	Bridge	Assigned various costs based on comparable costs	
	Dams		
	Paved Areas & Byways (3" depth)	\$1.15/ sq. ft	Dept. of Transportation
	Fire Bags	\$55 each	Forest Environment
	Fire Hoses	\$105/100 linear ft	
	Unpaved Roads	Assigned various costs based on comparable costs.	
	Trails		
<i>Motorized Equipment</i>	Registered Equipment	Assigned various costs based on comparable costs.	
	Motor Vehicles	Internet and comparable costs.	Forest Environment & Internet
	Unregistered Equipment	Assigned various costs based on comparable costs.	Forest Environment
<i>Vehicle Attachments</i>	Plow		
	Skid Units		
<i>Communication Equipment</i>	N/A	Mobile Radios and Base Radios each \$1350; Portable Radios each \$700	

Appendix C, Table 2: Building Code Legend

BUILDING TYPE	BUILDING CODE	COST/Sq. ft.
Enclosed Heated	EH	\$100
Enclosed Unheated	EU	\$75
Shelter	SH	\$50
Restroom Heated	RH	\$250
Restroom Unheated	RU	\$200
Derelict	D	\$0
Public Utility Building	PU	\$200
Toll Booth	T	\$100
Miscellaneous	M	\$TBD
<i>Plans for Construction</i>	<i>PC</i>	<i>\$TBD</i>
<i>No Measurements</i>	<i>NM</i>	<i>\$0</i>
<i>Scheduled for Demolish</i>	<i>DE</i>	<i>\$0</i>
<i>**Pit Toilets (2 toilets)</i>	<i>PT</i>	<i>\$20,000</i>
[clivus multirim]		
<i>No Value (would not be constructed today)</i>	<i>NV</i>	<i>\$0</i>

Table 7 Notes

- TBD represents to be determined for each asset on an individual basis
- Provided by the RIDEM's Office of Planning and Development
- **Provided by RIDEM's Division of Forest Environment
- The cost per sq. ft. includes only cost of material and labor for buildings, not the cost for architectural design.

Appendix C, Table 3: Division of Forest Environment's State General Fund Appropriations and Spending FY1994 to FY 2000

<i>Account # 1733-10000</i>	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	FY 00
Appropriated	1,233,927	1,188,111	1,288,645	1,134,422	1,306,008	1,403,444	1,433,688
Spent	1,545,927	1,540,768	1,432,376	1,438,304	1,455,724	1,435,636	1,565,687
Difference	-312,000	-352,657	-143,731	-303,882	-149,716	-32,192	-131,999
Deficit Average	-203,740						
Account # 1733-10300							
Appropriated	0	0	0	0	10000	32887	33425
Spent	39,738	11,790	36,936	2,875	16,420	82,873	131,961
Difference	-39,738	-11,790	-36,936	-2,875	-6,420	-49,986	-98,536
Totals							
Appropriated	1,233,927	1,188,111	1,288,645	1,134,422	1,316,008	1,436,331	1,467,113
Appropriated Inflated	1,233,927	1,270,945	1,309,073	1,348,345	1,388,796	1,430,460	1,473,373
Spent	1,585,665	1,552,558	1,469,312	1,441,179	1,472,144	1,518,509	1,697,648
Spent Inflated	1,585,665	1,633,235	1,682,232	1,732,699	1,784,680	1,838,220	1,893,367
Total Deficit Spending	-351,738	-364,447	-180,667	-306,757	-156,136	-82,178	-230,535
Average	-238923						

Appendix C, Table 4: Division of Forest Environment's Federal Funds Spent FY 1994 To FY 2000

Account #	Program Name	1994	1995	1996	1997	1998	1999	2000
1733-50100	Cooperative Forestry	288,423	281,208	317,147	296,384	304,335	318,171	307,428
1733-50500	Rural Community Fire Protection	16,828	7,114	15,913	8,953	5,762	9,867	1,044
1733-50800	SBA Tree Planting	95,859	90,592	83,871	8,861	-	-	
1733-51100	Natural Resource Conservation Education	9,054	-	15,645	4,549	4,659	9,189	6,449
1733-51600	Forestry Legacy	-	-	1,902	2,703	-	656,045	270,270
	Total	410,164	378,914	434,478	321,450	314,756	993,272	585,191
	Total Rounded	0.41	0.379	0.434	0.321	0.315	0.993	0.585
	Percent Increase		-7.62%	14.66%	-26.01%	-2.08%	215.57%	-41.08%
	TOTAL INFLATED	410,164	422469	435143	448197	461643	475492	489757

Appendix C, Table 5: Capital Budget for Management Areas FY 2001 To FY 2007

				Spent	Enacted	Proposed					
Project		Estimated Cost	Source Of Funds	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Total FY 2001-FY2002
<i>Pulaski</i>											
	<i>Construction</i>	\$680,000	<i>RI CAP/ Federal</i>	\$19,830	\$680,000						\$680,000
<i>Arcadia Bridge Improvements</i>	<i>Design</i>	\$100,000	<i>RI CAP</i>			\$100,000					\$100,000
	<i>Construction</i>	\$775,000	<i>RI CAP</i>				\$200,000	\$200,000	\$75,000	\$300,000	\$775,000
<i>Bowdish Reservoir Dam</i>	<i>Construction</i>	\$995,411	<i>RI CAP</i>	\$995,411							\$995,411
<i>Breakheart Road/Bridge-dam Repair</i>	<i>Breakheart Road / Bridge-dam repair</i>	\$400,000	<i>RI CAP</i>							\$400,000	\$400,000
Totals		\$2,950,411	-	\$19,830	\$680,000	\$100,000	\$200,000	\$200,000	\$75,000	\$700,000	\$2,950,411

Appendix C, Table 6: Costs to Replace, Repair and Renovate Assets

Asset Category	High Priority	Priority	Average Priority	Low Priority	
Repair, Replacement & Renovation Schedule	1 to 7 Years	8 to 12 Years	13 to 16 Years	17 to 20 Years	Grand Total
Bridges	\$874,998	\$0	\$0	-	\$874,998
Buildings	\$1,065,740	\$131,150	\$68,250	\$14,250	\$1,279,390
Communication Equipment	\$40,250	\$8,800	\$8,300	\$29,400	\$86,750
Dams*	\$1,355,411	\$0	\$0	\$0	\$400,000
Miscellaneous	\$250,000	\$6,000	\$0	\$0	\$256,000
Heavy Equipment	\$485,250	\$145,000	\$8,000	-	\$538,250
Light Equipment	\$37,000	\$5,849	\$85,849	\$8,000	\$140,298
Vehicles	\$530,477	\$183,908	\$278,025	\$217,175	\$1,209,585
Total Cost To Address	\$4,639,128	\$480,707	\$448,424	\$268,825	\$5,837,082

Appendix C, Table 7: Number and Percentage of Assets in Each Schedule Time Period

Asset Category	High Priority	Priority	Average Priority	Low Priority	
<u>Repair, Replacement & Renovation Schedule</u>	1 to 7 Years	8 to 12 Years	13 to 16 Years	17 to 20 Years	Grand Total
<u>Type of Asset</u>	% Of Assets And Number Of Assets In Asset Category				
Bridges	100% (7)	0	0	0	7
Buildings	32% (23)	22% (16)	24% (17)	21% (15)	71
Communication Equipment	45% (38)	8% (7)	12% (10)	35% (29)	84
Dams*	100% (2)	0	0	0	2
Miscellaneous	22% (2)	44% (4)	22% (2)	11% (1)	9
Heavy Equipment	69% (9)	15% (2)	15% (2)	0	13
Light Equipment	50% (5)	10% (1)	20% (2)	20% (2)	10
Vehicles	46% (19)	15% (6)	10% (4)	29% (12)	41
Total % of Assets & Total Count	44% (105)	16% (36)	16% (37)	25% (59)	237

Appendix C, Table 8: Unfunded High Priority Repair, Replacement and Renovation of Assets

A	B	C	D	E	F
Asset	Cost to Address High Priority Assets	Capital Enacted/Spent FY 2001-2002	Capital Request FY 2003-2007	Grant	Unfunded
Bridges	\$874,998	\$0	\$875,000	\$0	\$0
Buildings	\$1,065,740	\$699,830	\$0	\$0	\$365,910
Dams	\$1,355,411	\$955,411	\$400,000	\$0	\$0
Heavy and Other Registered Equipment	\$485,250	\$0	\$0	\$0	\$485,250
Miscellaneous	\$250,000	\$0	\$0	\$0	\$250,000
Other Equipment Total	\$77,250	\$0	-	\$15,000	\$62,250
Communication Equipment	\$40,250	\$0	\$0	\$15,000	\$25,250
<i>Light Equipment</i>	\$37,000	\$0	\$0	\$0	\$37,000
Vehicles	\$530,477	\$0	\$0	\$0	\$530,477
Total	\$4,639,128	\$1,655,241	\$1,275,000	\$15,000	\$1,693,887

*Column F = (Column B) – (Column C) – (Column D) – (Column E)

Appendix C, Table 9: The Division of Forest Environment’s Federal Surplus Items (FSI) By Percentages

Registered Equipment		
	Non-FSE	FSI
Low Priority		0%
Average Priority	100%	0%
Priority	100%	100%
High priority	0%	33%
	67%	
<i>Total</i>	46%	46%
Unregistered Equipment		
Low Priority	50%	50%
Average Priority	50%	50%
Priority	100%	0%
High Priority	80%	20%
Total	70%	30%
Motorized Vehicles		
Priority	33%	67%
Average Priority	50%	50%
Low Priority	83%	17%
High Priority	37%	63%
Total	51%	49%
Grand Total	56%	44%

Appendix C, Table 10: Division of Forest Environment RI Management Area Responsibilities

Management Area	Acres ⁹	Lead Office	Operations Maintenance	Forest Fire Control	Law Enforcement (32.24)	Forest Management	Insect & Disease Control	Conservation Ed. Program	Timber Sales	Arborist Licensing	Recreation Permitting	Recreation Management
Arcadia	14147	FE	X	X	X	X	X		X			X
Big River	8319	FE	X	X	X	X			X			X
Black Farm	245	FW		X	X	X			X			
Black Hut	1548	FW		X	X	X			X			
Buck Hill	2049	FW	X	X	X	X			X			
Burlingame	1390	FW	X	X	X	X			X			X
Carolina	2359	FW	X	X	X	X			X			
Durfee Hill	1258	FW	X	X	X	X			X			
Dutch Island	94	FW										
George Washington	3489	FE	X	X	X	X	X		X			X
Great Swamp Area	3350	FW		X		X			X			
Killingly	396	FW										
Newton Swamp	111	FW										
Nicholas Farm	1549	FW	X	X	X				X			
Patience Island	213	FW										
Prudence Island N.	980	FW		X								
Prudence Island S.	831	FW		X								
Rockville	1002	FW	X	X	X							
Sapowet	192	FW										
Simmons Mill Pond	400	FW										
South Shore	109	FW	X									
Wickaboxet	679	FE	X	X	X	X			X			X
Woody Hill	819	FW	X	X	X	X			X			X

FE = The Division of Forest Environment

FW = The Division of Fish and Wildlife

⁹ Tefft, Brian C. *The Atlas of Rhode Island Wildlife Management Areas*, RIDEM, 10 October 1996.